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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, TU MINH

ART UNIT

PAPER NUMBER

3748

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/595,634	<b>Applicant(s)</b> COLIGNON, CHRISTOPHE	
	<b>Examiner</b> TU M. NGUYEN	<b>Art Unit</b> 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060501</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. An Applicant's Preliminary Amendment filed on May 1, 2006 has been entered. Claims 1-11 have been amended. Overall, claims 1-11 are pending in this application.

#### ***Election/Restrictions***

2. Applicant's election without traverse of the species of particulate filter (paragraph 0057) in the Applicant's Response to an Election/Restriction Requirement filed on October 31, 2008 is acknowledged. Claims 1-6 and 9-11 are readable thereon and will be examined in their full merit. Claims 7-8 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

#### ***Specification***

3. The abstract of the disclosure is objected to because of the use of legal phrase "means" on lines 7, 12, 14, 18, and 22. Correction is required. See MPEP § 608.01(b).

#### ***Claim Objections***

4. Claims 3 and 6-9 are objected to because "comprise" should read --comprises--.  
Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**6. Claims 1-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaller et al. (U.S. Patent 6,948,311) in view of Otake et al. (U.S. Patent 6,952,919).**

Re claim 1, as shown in Figure 1, Schaller et al. disclose a system for assisting the regeneration of depollution means (115b) associated with oxidation catalyst-forming means (115a), and integrated in an exhaust line of a motor vehicle engine, in which the engine is associated with a fuel feed means (180) for injecting fuel into the cylinders of the engine, including at least one post-injection (lines 9-16 of column 4), and adapted, at constant torque, to implement at least a regeneration strategy, the system including acquisition means (182, 193) for acquiring the exothermic temperature level of the catalyst-forming means, comparator means (step 270) for comparing this exothermic temperature level with a safety threshold for the catalyst-forming means, so that in the event of said threshold value being exceeded while applying the regeneration strategy, the feed means are controlled to regulate progressively at least one of the engine operation control parameters in such a manner as to reduce the exothermic temperature level of the catalyst-forming means (the post-injection is intermittently injected during a third phase in order to maintain the exothermic temperature level of the

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catalyst-forming means within a desired range (see claims 1 and 4, also see lines 46-65 of column 4)); wherein:

- the feed means are adapted to implement two successive post-injections;
- during regulation, the feed means are adapted to reduce progressively the flow rate of fuel in the second post-injection; and
- the feed means are adapted to reduce the flow rate of the second post-injection by using a correction factor lying in the range 0 to 1 and determined on the basis of the difference between the exothermic temperature level and the safety threshold value (a correction factor of 0 is used to cut-off the post-injection fuel).

Schaller et al., however, fail to disclose that the engine is a diesel type engine; that the system has at least two regeneration strategies, at a first level and at a second level, depending on different engine operation control parameters in order to obtain different temperature levels in the exhaust line, the temperature level corresponding to the second level strategy being higher than that corresponding to the first level strategy; that the system switches to the other strategy if in the current strategy, the exothermic temperature level of the catalyst-forming means does not drop below a threshold value at the end of a first predetermined time period; and that if the exothermic temperature level of the catalyst-forming means still does not drop below the safety threshold value at the end of a second period of time, to stop the regeneration strategy.

Schaller et al. disclose the claimed invention except for applying the invention to a diesel engine. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the invention of Schaller et al. to a diesel engine in which the engine is associated with common rail means for feeding fuel to the cylinders of the engine,

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since the recitation of such amounts to an intended use statement. Note that both “diesel engine” and “spark-ignition engine” generate exhaust gases containing harmful emissions of HC, NO<sub>x</sub>, soot, CO, etc, that require purification before the gases can be released to the atmosphere; and the mere selection of the system and method of Schaller et al. for use in a diesel engine would be well within the level of ordinary skill in the art.

As shown in Figure 1A, Otake et al. disclose an exhaust gas purifying system for internal combustion engine, comprising a particulate filter (13). As depicted in Figures 4-5, Otake et al. teach that it is conventional in the art to identify various regions of engine operating condition and allocate a plurality of strategies that are suitable for regenerating the particulate filter based on a particular region of engine operating condition. Also as shown in Figure 2-3, Otake et al. also teach that it is conventional in the art to switch to other strategies (step S12) if in the current strategy, the exothermic temperature level of the particulate filter does not drop below a threshold value at the end of a first predetermined time period (step S10 with YES answer); and that if the exothermic temperature level of the filter still does not drop below the safety threshold value at the end of a second period of time, to stop the regeneration strategy (see steps S13 and S18). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Otake et al. in the system of Schaller et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to efficiently regenerate a particulate filter.

Re claim 2, in the modified system of Schaller et al., the correction factor is determined by a PI type regulator having non-linear gain.

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Re claim 3, in the modified system of Schaller et al., the acquisition means for acquiring the exothermic temperature comprises two temperature sensors (182, 193), one placed upstream and the other placed downstream from the catalyst-forming means (115a).

Re claim 4, in the modified system of Schaller et al., the engine is a diesel engine associated with a turbocharger that is obvious for a typical diesel engine

Re claim 5, in the modified system of Schaller et al., the value of the safety threshold is calibratable.

Re claim 6, in the modified system of Schaller et al., the depollution means comprises a particle filter (115b).

Re claim 9, in the modified system of Schaller et al., the depollution means comprises an oxidation catalyst (see lines 53-54 of column 2).

**7. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaller et al. in view of Otake et al. as applied to claim 1 above, and further in view of Rao (U.S. Patent 4,655,037).**

Re claim 10, the modified system of Schaller et al. disclose the invention as cited above, however, fail to disclose that the fuel includes an additive for becoming deposited together with the particles with which it is mixed on the depollution means in order to facilitate regeneration thereof.

Rao discloses a carbon ignition temperature depressing agent and a method of regenerating a particle filter utilizing the agent. As indicated on lines 30-42 of column 3 and line 58 of column 3 to line 14 of column 4, Rao teaches that it is conventional in the art to include an additive (metal oxide) in an engine fuel so that the additive is deposited together with the

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particles with which the additive is mixed on a particle filter in order to facilitate regeneration thereof by reducing an ignition temperature of the particles. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the additive taught by Rao in the modified system of Schaller et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to save fuel or electricity by reducing an ignition temperature of the particles.

Re claim 11, in the modified system of Schaller et al., as taught by Rao, the fuel includes an additive (metal oxide) forming a NO<sub>x</sub> trap.

#### ***Prior Art***

8. The IDS (PTO-1449) filed on May 1, 2006 has been considered. An initialized copy is attached hereto.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of four patents: Tashiro et al. (U.S. Patent 6,622,480), Kawashima et al. (U.S. Patent 6,851,258), Okugawa et al. (U.S. Patent 7,231,761), and Kawashima et al. (U.S. Patent 7,340,886) further disclose a state of the art.



*Communication*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMN

January 16, 2009

/Tu M. Nguyen/

Tu M. Nguyen

Primary Examiner

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